

Interactive comment on “Multi-year satellite observations of instability waves in the Tropical Atlantic Ocean” by A. C. V. Caltabiano et al.

Anonymous Referee #2

Received and published: 10 February 2005

Review of OSD-2004-0007: "Multi-year satellite observations of instability waves in the tropical Atlantic Ocean" by Caltabiano, Robinson, and Pezzi

Recommendation: Accepted with minor revisions

The manuscript analyzes satellite observations to examine tropical instability waves (TIWs) in the tropical Atlantic Ocean. It clearly shows spatial structure of TIWs in the Atlantic Ocean as well as their temporal variations. The paper also discusses the possible air-sea coupling mechanisms that were previously published in this topic. This is a nice observational paper. Despite a need for improving (see my comments below), it should be accepted for publication. My comments are also listed as follows.

In the paper, the authors discuss two mechanisms that were hypothesized for the relationship between SST and surface wind associated with TIWs: (1) the SST gradient of Lindzen and Nigam (1987) and (2) vertical mixing of Wallace et al. (1989). However,

the authors ignore a recent paper by Small et al. (2003, JC, p3723- 3741) who investigate the relative importance of vertical mixing and pressure gradient induced by the SST changes. Small et al. also show that pressure anomalies are located downstream of SST anomalies, in contrast to the collocation suggested or assumed by some studies. The present manuscript should discuss this recent paper by Small et al. (2003) and may make some modifications in their text.

Page 3, Line 3. Change "TIW modify" to "TIWs modify" or "TIW modifies".

Page 3, Line 9. Change "Although of" to "In spite of".

Pages 3 and 5. In these two places, the manuscript discusses the contribution of TIW-induced oceanic eddy heat flux. Using a moored array data, Wang and Weisberg (2001, JGR, p19515-19526) calculated the contribution of the eddy temperature flux to the ocean heat budget in the equatorial eastern Pacific. A discussion of this previous observed study on the eddy heat flux is needed.

Page 5, 2nd paragraph. I remembered that a group of scientists at University of Hawaii also showed TIWs using short-time satellite observations in the tropical Atlantic Ocean. Please check it.

Page 5, Line 28 and many places later. Change "TIW" to "TIWs".

Table 1. Delete "(cms-1)" below "Period (days)".

Page 10, Lines 16-17. Table 1 does not show the amplitude of TIW. How do you get the conclusion of the largest amplitude at 1N?

The title of Section 4 is not proper. It may be changed to something like "4. Discussion".

Page 15, Lines 4-5. For these two papers, one is for the Pacific and the other is for the Atlantic. Change the text.

Page 15, Line 12. Change "sowed" to "showed".

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